

Long-Term Monitoring at East and West Flower Garden Banks: A Program Synopsis from 1989 to 2016

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The coral reef-capped East Flower Garden Bank (EFGB) and West Flower Garden Bank (WFGB) are part of NOAA's Flower Garden Banks National Marine Sanctuary (FGBNMS) located in the northwestern Gulf of Mexico. Since 1989, a federally supported long-term coral reef monitoring program has focused on two study sites atop EFGB and WFGB, jointly funded by FGBNMS and the Bureau of Ocean Energy Management. The program was designed to assess coral reef health, detect change over time, and provide baseline data in the event that natural or human-induced activities endanger the integrity of the reef community. From 1989 to 2016 mean percent coral cover ranged from 37–66%, significantly increasing in both study sites over time. Mean macroalgae percent cover increased significantly between 1998 and 1999, rising from approximately 5% to 20%, and reaching a maximum above 30% in 2012; however, increases in mean macroalgae cover were not concomitant with significant coral cover decline within the EFGB and WFGB study sites. In repetitive study site photostations from 1989 to 2016, mean percent coral cover ranged from 45–74%, significantly increasing in photostations at both study sites over time. Fish surveys documented an abundant and diverse reef fish community. Seasonal variations in seawater temperature were observed since 1989, and prolonged temperatures above 30°C caused moderate to severe bleaching events in 1995, 2005, 2010, and 2016. Continued monitoring is critical to ensure long-term data are available to distinguish among the drivers of ecosystem variation in the northern Gulf of Mexico.